Space Weather Forecast

Issued on Friday 27 September 2024 at 13:09 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with the largest flare at 26/2312 UTC from a region just rotating onto the southeast limb. The majority of regions on the disc at present are small and simple. The largest of these is in the southeast of the disc, however this region is very simple and has been fading a little. A region near south centre disc is currently the next largest but is straightforward magnetically with limited penumbra. The new region on the southeast limb is difficult to assess due to foreshortening near the limb.

There were no Earth-directed Coronal Mass Ejections (CMEs) observed. However a CME seen emerging towards the southeast is currently undergoing analysis, but is considered unlikely to be Earth-directed.

Solar Wind / Geomagnetic Activity: Solar winds showed a declining trend in the tail of the recent coronal hole fast wind. Wind speeds eased from around 410 km/s to near 340 km/s. Interplanetary Magnetic Field was weak, with the north-south component weakly variable but largely southward directed. Geomagnetic activity was Unsettled (Kp 3) between 26/1200-1500 UTC, then Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of further isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs are currently expected. The current background solar winds are expected to persist until a possible weak fast wind enhancement occurs, with wind speeds perhaps reaching around 450km/s. The fast wind onset is expected late on Day 2 or during Day 3 (28-29 Sep).

Mainly Quiet (Kp 0-2) geomagnetic conditions are expected for much of this period. The onset of any fast wind could bring a spell of Unsettled to Active (Kp 3-4) intervals late on Day 2 into Day 3.

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Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels with just a very slight chance of solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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